

Please cancel ~~claims 1-30~~ without prejudice or disclaimer and substitute new claims 31-52 therefor as follows:

91 > --31. Pulsed transmission system, comprising at least one transmission station for transmitting an optical signal at a transmission wavelength, at least one reception station, a fibre-optic line linking said at least one transmission station and said at least one reception station and at least one optical amplifier serially linked along said fibre-optic line, wherein said fibre-optic line has a positive overall chromatic dispersion at said transmission wavelength and comprises:

a first optical conductor element, having a first chromatic dispersion at said transmission wavelength; and

a chromatic dispersion compensating unit having a second chromatic dispersion at said transmission wavelength, said second chromatic dispersion being of opposite sign with respect to said first chromatic dispersion,

wherein said at least one transmission station comprises a high speed optical pulse transmitter adapted to generate an RZ optical signal at said transmission wavelength, bearing a coded information at a preset frequency, said RZ optical signal comprising optical pulses of duration T_{FWHM} , wherein:

the ratio $T_{\text{bit}}/T_{\text{FWHM}}$, between the inverse T_{bit} of said preset frequency and said duration T_{FWHM} of the pulses, is higher than 200/75 and lower than 10, and said optical pulses are substantially free from chirp.

32. Pulsed transmission system according to Claim 31, wherein said transmission station comprises at least an interfacing unit adapted to receive a first

optical signal at said preset frequency bearing said coded information, said at least an interfacing unit including a receiving and converting unit adapted to receive said first information-bearing optical signal, to convert it into an electrical signal bearing said coded information, and to feed said information-bearing electrical signal to said high speed optical pulse transmitter.

33. Pulsed transmission system according to Claim 31, wherein said high speed optical pulse transmitter comprises:

an optical pulse modulator adapted to modulate an optical signal with a sequence of periodic pulses having said duration T_{FWHM} and said preset frequency;

an optical signal modulator optically linked to said signal modulator, adapted to modulate said optical signal with said coded information; and

a generator of a continuous optical signal at said transmission wavelength, optically linked to said pulse and signal modulators.

34. Pulsed transmission system according to Claim 31, wherein said chromatic dispersion compensating unit comprises a second optical conductor element serially linked to said first optical conductor element.

Sub B19 35. Pulsed transmission system according to Claim 34, wherein said optical signal at said transmission wavelength has, for at least one portion of its propagation path in one of said first and second optical conductor elements, an intensity of a value such as to cause self phase modulation of said second optical signal.

36. Pulsed transmission system according to Claim 34, wherein said optical amplifier has amplification characteristics such that said optical signal at said transmission wavelength has, in at least one portion of its propagation path in one of

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said first and second optical conductor elements, an intensity of a value such as to undergo self phase modulation.

37. Pulsed transmission system according to Claim 31, wherein said first optical conductor element is a step index optical fibre.

38. Pulsed transmission system according to Claim 31, wherein said first optical conductor element is an optical fibre with non-zero dispersion.

39. Pulsed transmission system according to Claim 31, wherein said chromatic dispersion compensation unit is adapted to compensate a fraction of the chromatic dispersion of the line, such that the total chromatic dispersion of the line is between 100 and 120% of the compensated dispersion.

40. Optical pulse transmission method, comprising the steps of:
emitting an optical signal at a transmission wavelength and at a preset frequency bearing a coded information;

supplying the optical signal in an optical-fibre line having a chromatic dispersion;
compensating the chromatic dispersion of the signal in the optical-fibre line with a chromatic dispersion of opposite sign, so as to achieve an overall positive dispersion for the optical signal;

wherein said step of emitting comprises:

generating a sequence of substantially chirp-free optical pulses at the transmission wavelength having a duration T_{FWHM} , the ratio T_{bit}/T_{FWHM} , between the inverse T_{bit} of said preset frequency and said duration T_{FWHM} of the pulses, being higher than 200/75 and lower than 10; and

modulating said sequence of optical pulses with said coded information.

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41. Optical pulse transmission method according to Claim 40, wherein said step of generating said sequence of pulses comprises combining a first periodic electrical signal at said preset frequency and at least one second periodic electrical signal at a second frequency which is a harmonic of said preset frequency.

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42. High-speed optical pulse transmitter, comprising:
an optical signal modulator;
an optical pulse modulator, optically linked to said signal modulator;
a generator of a continuous optical signal, optically linked to said signal and pulse modulators;

a signal modulator driver for feeding said signal modulator with an electrical signal bearing a coded information with a first frequency; and

a pulse modulator driver comprising:

a circuit for generating a first periodic electrical signal at said first frequency;

a circuit for generating a second periodic electrical signal at a second frequency which is a harmonic of said first frequency;

a first and a second amplifier for amplifying said first and second periodic electrical signal; and

a combining element for combining said amplified first and second periodic electrical signals, and for feeding said pulse modulator with said combined signal.

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43. High-speed optical pulse transmitter, according to Claim 42, wherein said circuit for generating said first periodic electrical signal at said first frequency is driven by a clock signal associated with said information-bearing electrical signal.

44. High-speed optical pulse transmitter, according to Claim 42, wherein said circuit for generating said second periodic electrical signal comprises a frequency multiplier linked to said circuit for generating said first periodic electrical signal.

45. High-speed optical pulse transmitter, according to Claim 43, said circuit for generating said first periodic electrical signal comprises an output for a synchronization signal, said synchronization signal being in a preset time relationship with said clock signal, said output being linked to said signal modulator driver.

46. High-speed optical pulse transmitter, according to Claim 42, wherein said combining element is a distributed-constants circuit.

47. Pulsed transmission system, comprising at least one transmission station for transmitting an optical signal, one reception station, one fibre-optic line linking said transmission station and said reception station and at least one optical amplifier serially linked along said fibre-optic line, wherein said transmission station comprises a high speed optical pulse transmitter according to Claim 42.

48. Pulsed transmission system, according to Claim 47, wherein said fibre-optic line has overall chromatic dispersion greater than zero at the wavelength of said optical signal.

49. Pulsed transmission system, according to Claim 48, wherein said fibre-optic line comprises chromatic dispersion compensation means adapted to compensate

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p. 4
cont.

a fraction of the chromatic dispersion of the line and such that the total chromatic dispersion of the line is between 100 and 120% of the compensated dispersion.

50. Pulsed transmission system, according to Claim 49, wherein said transmission station comprises:

a plurality of high speed optical pulse transmitters, each comprising a respective generator of a continuous optical signal at a respective wavelength, different from that of the other units, each transmitter being able to generate an appropriate pulsed optical signal at a respective wavelength; and

a multiplexer for combining said pulsed optical signals.

51. Pulsed transmission system, according to Claim 50, wherein said reception station comprises a wavelength demultiplexer for separating said pulsed optical signals.

52. Method of high-speed optical transmission, comprising the steps of:
generating an optical signal;
modulating said optical signal with a periodic drive signal;
modulating said optical signal with an information bearing signal at a preset frequency; and
generating said periodic drive signal by combining an amplified periodic signal at said preset frequency and at least an amplified periodic signal at a harmonic of said preset frequency.--

REMARKS

The specification and claims have been amended to conform them to the Article 34 amendment filed in PCT/EP98/04782. The amendment to page 3 of the